

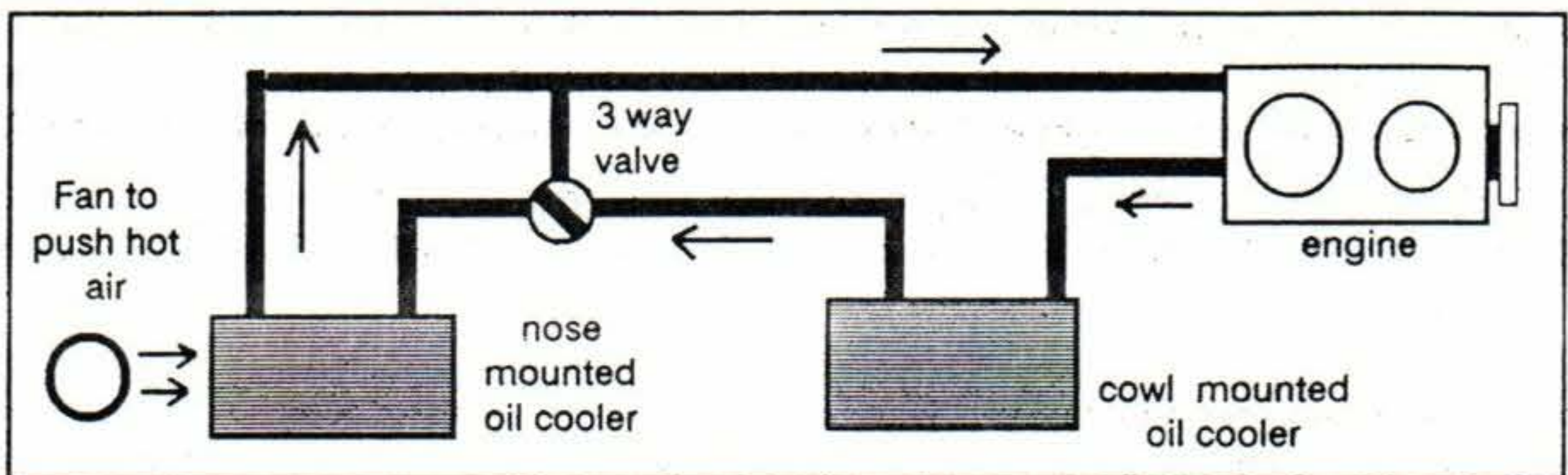
## Oil Cooler/Heater

Vance Atkinson - Recently Tom Mc Neilly (602) 899-7613 rebuilt Bob Beard's Two-Easy. He put a great heater system in it which he swears by!

He has installed two oil coolers. One is in the conventional position in the cowl while the other is in the nose

with no outside air ducted to it.

The units are plumbed in series with a 3 way valve up front by the pilot to allow oil to flow to the front cooler. Without no outside air to cool the nose oil cooler it heats up very nicely. Behind it is a small muffin fan which circulates air throughout the whole aircraft. This system works like a car heater except the warming agent is oil.



## Evening Up CHT's

Uneven cylinder temperatures may be evened up in many ways. Cowling ramps are a start but are the hard way to go. Look at the cowl air flow and think about what determines air flow by a cylinder. I assume you have a fixed geometry inlet. (you should not limit yourself that way.) See newsletters: CSA April 91 p7 Control That Cooling Drag, CSA July 91 p 30 Variable NACA Air Inlet, CSA Oct 90 p 20 Latest Atkinson Mod, CSA Jan 90 p 2 O-320 Lycoming Cooling Cures).

If you have a minimum of leaks around the baffling, then all the inlet air must go around the cylinders cooling them. The air flow through each cylinder baffle is determined by pressure differential. If you want a greater flow of air by a cylinder, thus dropping its temperature, you must increase the cooling air pressure at the inlet to that cylinder's baffle (use ramps to redirect air flow) or you must decrease the pressure at the outlet of that cylinder's baffle (open

the outlet to that cylinder's baffle).

Ramps are kind of quick and dirty. They have extra weight, are not easy to predict exact effect, catch oil from a leaking engine, cause local disturbance of air flow in the lower cowl plenum, may or may not achieve the desired effect, etc.

Another approach is to lower the outlet pressure by adjusting the outlet area for each cylinder to provide equal cooling air flow for each cylinder. If a cylinder runs hot then open up the outlet baffle by rolling the baffle lip back on the hot cylinder. After adjustment - go fly and see the effect. Keep tweaking until you get the desired CHT's. If all CHT's are too high you need more air flow to the bottom of the cylinders. Try opening the NACA inlet by dropping the lip to act as a scoop. Use this technique on climb or high power operation. When in reduced power cruise, close up the inlet to reduce drag. At higher air speeds you need less inlet area because the air flow is much faster and a small inlet will still let in enough volume of cooling air to cool the engine.